Agency for Healthcare Research and Quality
Advancing Excellence in Health Care

NATIONAL QUALITY MEASURES CLEARINGHOUSE

General

Title

Diagnosis and management of type 2 diabetes mellitus (T2DM) in adults: percentage of patients ages 40 to 75 years old with untreated LDL greater than 70 mg/dL who are prescribed statin therapy.

Source(s)

Redmon B, Caccamo D, Flavin P, Michels R, O'Connor P, Roberts J, Smith S, Sperl-Hillen J. Diagnosis and management of type 2 diabetes mellitus in adults. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2014 Jul. 85 p. [197 references]

Measure Domain

Primary Measure Domain

Clinical Quality Measures: Process

Secondary Measure Domain

Does not apply to this measure

Brief Abstract

Description

This measure is used to assess the percentage of patients ages 40 to 75 years old with untreated low-density lipoprotein (LDL) greater than 70 mg/dL who are prescribed statin therapy.

Rationale

The priority aim addressed by this measure is to increase the percentage of patients with type 2 diabetes mellitus (T2DM) who are on appropriate medication management.

Due to the high percentage of the United States (U.S.) population that is diagnosed with diabetes and the effect diabetes has on other comorbidities, appropriate management will improve the patient's experience of care and the health of the population, reducing office visits, emergency department visits, and cardiovascular complications. Other related conditions will in turn reduce the total cost of care.

Appropriate medication management targeting glycemic control, hypertension, and lipid management is important for reducing morbidity and mortality, and improving long-term quality of life for patients diagnosed with T2DM. Lifestyle changes such as nutrition therapy, weight loss, increased exercise, and appropriate education and self-management strategies are pivotal to improved outcomes. Inadequate access to care for chronic disease management as well as the cost of medication can contribute to poor control of T2DM and associated cardiovascular risk factors.

The use of at least moderate-intensity statin therapy in persons between 40 and 75 years and an elevated low-density lipoprotein (LDL) level with a diagnosis of diabetes has been shown to be effective. The only trial of high-intensity therapy in primary prevention was performed in a population without diabetes. High-intensity statin therapy reduces the relative risk of atherosclerotic cardiovascular disease (ASCVD) events more than moderate-intensity statin therapy in patients with ASCVD. Because individuals with diabetes are at substantially increased lifetime risk for ASCVD events and death, similar to those who have had a previous ASCVD event, persons with diabetes with high estimated 10-year ASCVD risk are likely to benefit similarly from high-intensity therapy (Taylor et al., 2013; Macchia et al., 2012; AIM-HIGH Investigators et al., 2011; ACCORD Study Group et al., 2010; Cholesterol Treatment Trialists' [CTT] Collaborators et al., 2008; CTT Collaboration et al., 2010; Cannon et al., 2004; Collins et al., 2003).

Evidence for Rationale

ACCORD Study Group, Cushman WC, Evans GW, Byington RP, Goff DC, Grimm RH, Cutler JA, Simons-Morton DG, Basile JN, Corson MA, Probstfield JL, Katz L, Peterson KA, Friedewald WT, Buse JB, Bigger JT, Gerstein HC, Ismail-Beigi F. Effects of intensive blood-pressure control in type 2 diabetes mellitus. N Engl J Med. 2010 Apr 29;362(17):1575-85. PubMed

AIM-HIGH Investigators, Boden WE, Probstfield JL, Anderson T, Chaitman BR, Desvignes-Nickens P, Koprowicz K, McBride R, Teo K, Weintraub W. Niacin in patients with low HDL cholesterol levels receiving intensive statin therapy. [Erratum appears in N Engl J Med. 2012 Jul 12;367(2):189]. N Engl J Med. 2011 Dec 15;365(24):2255-67.

Cannon CP, Braunwald E, McCabe CH, Rader DJ, Rouleau JL, Belder R, Joyal SV, Hill KA, Pfeffer MA, Skene AM, Pravastatin or Atorvastatin Evaluation and Infection Therapy-Thrombolysis in Myocardial Infarction 2. Intensive versus moderate lipid lowering with statins after acute coronary syndromes. N Engl J Med. 2004 Apr 8;350(15):1495-504. PubMed

Cholesterol Treatment Trialists' (CTT) Collaboration, Baigent C, Blackwell L, Emberson J, Holland LE, Reith C, Bhala N, Peto R, Barnes EH, Keech A, Simes J, Collins R. Efficacy and safety of more intensive lowering of LDL cholesterol: a meta-analysis of data from 170,000 participants in 26 randomised trials. Lancet. 2010 Nov 13;376(9753):1670-81. [49 references] PubMed

Cholesterol Treatment Trialists' (CTT) Collaborators, Kearney PM, Blackwell L, Collins R, Keech A, Simes J, Peto R, Armitage J, Baigent C. Efficacy of cholesterol-lowering therapy in 18,686 people with diabetes in 14 randomised trials of statins: a meta-analysis. Lancet. 2008 Jan 12;371(9607):117-25. PubMed

Collins R, Armitage J, Parish S, Sleigh P, Peto R. MRC/BHF Heart Protection Study of cholesterol-lowering with simvastatin in 5963 people with diabetes: a randomised placebo-controlled trial. Lancet. 2003 Jun 14;361(9374):2005-16. PubMed

Macchia A, Laffaye N, Comignani PD, Cornejo Pucci E, Igarzabal C, Scazziota AS, Herrera L, Mariani JA, Bragagnolo JC, Catalano H, Tognoni G, Nicolucci A. Statins but not aspirin reduce thrombotic risk assessed by thrombin generation in diabetic patients without cardiovascular events: the RATIONAL trial. PLoS ONE. 2012;7(3):e32894.

Redmon B, Caccamo D, Flavin P, Michels R, O'Connor P, Roberts J, Smith S, Sperl-Hillen J. Diagnosis

and management of type 2 diabetes mellitus in adults. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2014 Jul. 85 p. [197 references]

Taylor F, Huffman MD, Macedo AF, Moore TH, Burke M, Davey Smith G, Ward K, Ebrahim S. Statins for the primary prevention of cardiovascular disease. Cochrane Database Syst Rev. 2013;1:CD004816.

Primary Health Components

Type 2 diabetes mellitus (T2DM); low-density lipoprotein (LDL); statin therapy

Denominator Description

Number of patients ages 40 to 75 years old who have type 2 diabetes mellitus (T2DM) and untreated low-density lipoprotein (LDL) greater than 70 mg/dL (see the related "Denominator Inclusions/Exclusions" field)

Numerator Description

Number of patients who are prescribed statin therapy

Evidence Supporting the Measure

Type of Evidence Supporting the Criterion of Quality for the Measure

A clinical practice guideline or other peer-reviewed synthesis of the clinical research evidence

Additional Information Supporting Need for the Measure

- Diabetes is a chronic disease that afflicts approximately 26.9% of United States (U.S.) residents aged 65 years and older. 1.9 million are diagnosed with diabetes every year, and an additional 7.0 million go undiagnosed and untreated (Centers for Disease Control and Prevention [CDC], 2011). More than 1 in 5 health care dollars in the U.S. goes to the care of people with diagnosed diabetes, costing $245 billion dollars annually.
- The benefits of a multifactorial approach to diabetes care are supported by the results of the Steno 2 Study of 160 patients with type 2 diabetes mellitus (T2DM) and microalbuminuria. Multifactorial interventions achieved a 50% reduction in mortality and significant reduction in microvascular complications five years after ending a 7.8-year multifactorial intervention that achieved glycated hemoglobin (A1c) of 7.8%, low-density lipoprotein (LDL) 83 mg/dL, blood pressure (BP) 131/73, compared to a conventional group that achieved A1c 9%, LDL 126 mg/dL and BP 146/78 (Gaede et al., 2008). Results of this study are consistent with the need for reasonable blood glucose control with emphasis on blood pressure and lipid management.
- Hospitalized patients with diabetes suffer increased morbidity, mortality, length of stay, and other related hospital costs compared to non-hyperglycemic inpatients (Umpierrez et al., 2002).
- Hyperglycemia has been associated with increased infection rates and poorer short-term and long-term outcomes in critically ill patients in the intensive care unit, post-myocardial infarction, and post-surgical settings (van den Berghe et al., 2001).
- There is a substantial increase in the prevalence of depression among people with diabetes as compared to the general adult population (Anderson et al., 2001). Depression impacts the ability of a person with diabetes to achieve blood glucose control, which in turn impacts the rate of development of diabetes complications (de Groot et al., 2001; Lustman & Gavard, 2001).

- Sleep apnea is a prevalent condition in obese patients with type 2 diabetes and is associated with significant comorbidities including hypertension, cardiovascular disease and insulin resistance.
- Up to 21% of patients with T2DM are found to have retinopathy at the time of diagnosis of diabetes mellitus (Fong et al., 2004). Generally retinopathy progresses from mild background abnormalities to preproliferative retinopathy to proliferative retinopathy.

Evidence for Additional Information Supporting Need for the Measure

Anderson RJ, Freedland KE, Clouse RE, Lustman PJ. The prevalence of comorbid depression in adults with diabetes: a meta-analysis. Diabetes Care. 2001 Jun;24(6):1069-78. PubMed

Centers for Disease Control and Prevention (CDC). National diabetes fact sheet, 2011: fast facts on diabetes. Atlanta (GA): Centers for Disease Control and Prevention (CDC); 2011.

de Groot M, Anderson R, Freedland KE, Clouse RE, Lustman PJ. Association of depression and diabetes complications: a meta-analysis. Psychosom Med. 2001 Jul-Aug;63(4):619-30. PubMed

Fong DS, Aiello L, Gardner TW, King GL, Blankenship G, Cavallerano JD, Ferris FL 3rd, Klein R. Retinopathy in diabetes. Diabetes Care. 2004 Jan;27(Suppl 1):S84-7. [10 references] PubMed

Gaede P, Lund-Andersen H, Parving HH, Pedersen O. Effect of a multifactorial intervention on mortality in type 2 diabetes. N Engl J Med. 2008 Feb 7;358(6):580-91. PubMed

Lustman PJ, Gavard JA. Psychosocial aspects of diabetes in adult populations. In: National Diabetes Data Group. Diabetes in America. 2nd ed. Bethesda (MD): National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases; 1995. p. 507-18.

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Umpierrez GE, Isaacs SD, Bazargan N, You X, Thaler LM, Kitabchi AE. Hyperglycemia: an independent marker of in-hospital mortality in patients with undiagnosed diabetes. J Clin Endocrinol Metab. 2002 Mar;87(3):978-82. PubMed

van den Berghe G, Wouters P, Weekers F, Verwaest C, Bruyninckx F, Schetz M, Vlasselaers D, Ferdinande P, Lauwers P, Bouillon R. Intensive insulin therapy in the critically ill patients. N Engl J Med. 2001 Nov 8;345(19):1359-67. PubMed

Extent of Measure Testing

Unspecified

National Guideline Clearinghouse Link

Diagnosis and management of type 2 diabetes mellitus in adults.

State of Use of the Measure

State of Use

Current routine use

Current Use

not defined yet

Application of the Measure in its Current Use

Measurement Setting

Ambulatory/Office-based Care

Professionals Involved in Delivery of Health Services

not defined yet

Least Aggregated Level of Services Delivery Addressed

Clinical Practice or Public Health Sites

Statement of Acceptable Minimum Sample Size

Unspecified

Target Population Age

Age 40 to 75 years

Target Population Gender

Either male or female

National Strategy for Quality Improvement in Health Care

National Quality Strategy Aim

Better Care

National Quality Strategy Priority

Prevention and Treatment of Leading Causes of Mortality

Institute of Medicine (IOM) National Health Care Quality Report Categories

IOM Care Need

Living with Illness

IOM Domain

Effectiveness

Data Collection for the Measure

Case Finding Period

The time frame pertaining to data collection is the past 12 months.

Denominator Sampling Frame

Patients associated with provider

Denominator (Index) Event or Characteristic

Clinical Condition

Encounter

Patient/Individual (Consumer) Characteristic

Denominator Time Window

not defined yet

Denominator Inclusions/Exclusions

Inclusions
Number of patients ages 40 to 75 years old who have type 2 diabetes mellitus (T2DM) and untreated low-density lipoprotein (LDL) greater than 70 mg/dL

Data Collection: Data should be collected from electronic medical records (EMR) for all patient visits in the past 12 months.

Exclusions
Unspecified

Exclusions/Exceptions

not defined yet

Numerator Inclusions/Exclusions

Inclusions
Number of patients who are prescribed statin therapy

Exclusions
Unspecified

Numerator Search Strategy

Fixed time period or point in time

Data Source

Electronic health/medical record

Type of Health State

Does not apply to this measure

Instruments Used and/or Associated with the Measure

Unspecified

Computation of the Measure

Measure Specifies Disaggregation

Does not apply to this measure

Scoring

Rate/Proportion

Interpretation of Score

Desired value is a higher score

Allowance for Patient or Population Factors

not defined yet

Standard of Comparison

not defined yet

Identifying Information

Original Title

Percentage of patients ages 40-75 years with untreated LDL > 70 mg/dL who are prescribed statin therapy.

Measure Collection Name

Diagnosis and Management of Type 2 Diabetes Mellitus in Adults

Submitter

Institute for Clinical Systems Improvement - Nonprofit Organization

Developer

Institute for Clinical Systems Improvement - Nonprofit Organization

Funding Source(s)

The Institute for Clinical Systems Improvement's (ICSI's) work is funded by the annual dues of the member medical groups and five sponsoring health plans in Minnesota and Wisconsin.

Composition of the Group that Developed the Measure

Work Group Members: Bruce Redmon, MD (*Work Group Leader*) (University of Minnesota) (Endocrinology); David Caccamo, MD (HealthPartners Medical Group and Regions Hospital) (Family Medicine); Ryan Michels, PharmD, BCPS (HealthPartners Medical Group and Regions Hospital) (Pharmacy); Patrick O'Connor, MD (HealthPartners Medical Group and Regions Hospital) (Family Medicine); Julie Roberts, MS, RD, CDE (HealthPartners Medical Group and Regions Hospital) (Health Education); JoAnn Sperl-Hillen, MD (HealthPartners Medical Group and Regions Hospital) (Internal Medicine); Steve Smith, MD (Mayo Clinic) (Endocrinology); Penny Louise Flavin, DNP, RN, CNP (Olmsted Medical Center) (Family Practice); Cassie Myers (Institute for Clinical Systems Improvement [ICSI]) (Project Manager); Linda Setterlund, MA, CPHQ (ICSI) (Clinical Systems Improvement Facilitator)

Financial Disclosures/Other Potential Conflicts of Interest

The Institute for Clinical Systems Improvement (ICSI) has long had a policy of transparency in declaring potential conflicting and competing interests of all individuals who participate in the development, revision and approval of ICSI guidelines and protocols.

In 2010, the ICSI Conflict of Interest Review Committee was established by the Board of Directors to review all disclosures and make recommendations to the board when steps should be taken to mitigate potential conflicts of interest, including recommendations regarding removal of work group members. This committee has adopted the Institute of Medicine Conflict of Interest standards as outlined in the report Clinical Practice Guidelines We Can Trust (2011).

Where there are work group members with identified potential conflicts, these are disclosed and discussed at the initial work group meeting. These members are expected to recuse themselves from related discussions or authorship of related recommendations, as directed by the Conflict of Interest committee or requested by the work group.

The complete ICSI policy regarding Conflicts of Interest is available at the ICSI Web site

Disclosure of Potential Conflicts of Interest

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National, Regional, Local Committee Affiliations: None
Guideline Related Activities: None
Research Grants: None
Financial/Non-Financial Conflicts of Interest: None

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Research Grants: None
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Guideline Related Activities: None
Research Grants: None
Financial/Non-Financial Conflicts of Interest: None

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Guideline Related Activities: Lipid Management in Adults, Diagnosis and Treatment of Hypertension
Research Grants: Received institutional payment for research grants from NIH (National Institutes of Health), AHRQ (Agency for Healthcare Research and Quality, NIMH (National Institute of Mental Health), NHLBI (National Heart, Lung and Blood Institute) and to develop standards of diabetes care for American Diabetes Association
Financial/Non-Financial Conflicts of Interest: None

Bruce Redmon, MD (Work Group Member)
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Guideline Related Activities: None
Research Grants: NIH (National Institutes of Health) related to ongoing diabetes clinical trial, including the Look Ahead study and GRADE study
Financial/Non-Financial Conflicts of Interest: Consults for the University of Minnesota and Optum Insight and is paid directly to the physician's employer

Julie Roberts, MS, RD, CDE (Work Group Member)
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Guideline Related Activities: None
Research Grants: None
Financial/Non-Financial Conflicts of Interest: None

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Guideline Related Activities: None
Research Grants: None

Financial/Non-Financial Conflicts of Interest: None

JoAnn Sperl-Hillen, MD (Work Group Member)
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National, Regional, Local Committee Affiliations: None
Guideline Related Activities: Has served on guideline group for BMJ Online T2DM guideline
Research Grants: Receives programmatic support paid to her institution for the following: Stimulated Diabetes Training for Resident Physicians (NIDDK funded), Primary investigator; Personalized Physician Learning for HTN (NHLBI), co-investigator; Priorities (NHLBI), co-investigator; Hyperlink (NHLBI), co-investigator; travel and expenses paid for by an educational grant from Sanofi through the International Diabetes Center
Financial/Non-Financial Conflicts of Interest: None

Adaptation

This measure was not adapted from another source.

Date of Most Current Version in NQMC

2014 Jul

Measure Maintenance

Scientific documents are revised every 12 to 24 months as indicated by changes in clinical practice and literature.

Date of Next Anticipated Revision

The next scheduled revision will occur within 24 months.

Measure Status

This is the current release of the measure.

The measure developer reaffirmed the currency of this measure in January 2016.

Measure Availability

Source available for purchase from the Institute for Clinical Systems Improvement (ICSI) Web site. Also available to ICSI members for free at the ICSI Web site and to Minnesota health care organizations free by request at the ICSI Web site.

For more information, contact ICSI at 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; Phone: 952-814-7060; Fax: 952-858-9675; Web site: www.icsi.org; E-mail: icsi.info@icsi.org.

NQMC Status

This NQMC summary was completed by ECRI Institute on January 5, 2015.

The information was reaffirmed by the measure developer on January 13, 2016.

Copyright Statement

Production

Source(s)

Redmon B, Caccamo D, Flavin P, Michels R, O'Connor P, Roberts J, Smith S, Sperl-Hillen J. Diagnosis and management of type 2 diabetes mellitus in adults. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2014 Jul. 85 p. [197 references]

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